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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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| 08/822,170 | 03/21/97 | MILLS R | 9113-2 CN2 |

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| EXAMINER | |
|---|---|
| LANGEL,W | |
| **ART UNIT** | **PAPER NUMBER** |
| 1754 | 9 |

**DATE MAILED:** 10/21/98

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

| Application No. | Applicant(s) |
|---|---|
| 822170 | Mills |
| **Examiner** | **Group Art Unit** |
| Langel | 1754 |

***—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—***

**Period for Response**

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

**Status**

☒ Responsive to communication(s) filed on 8-31-98.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

**Disposition of Claims**

☒ Claim(s) 52-107 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 52-107 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement.

**Application Papers**

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119 (a)-(d)**

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 11 9(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received: _____.

**Attachment(s)**

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 8

☒ Notice of References Cited, PTO-892

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Interview Summary, PTO-413

☐ Notice of Informal Patent Application, PTO-152

☐ Other _____

**Office Action Summary**

Applicant's traverse of the restriction requirement has been considered and is deemed persuasive. Accordingly the restriction requirement is withdrawn.

***Claim Rejections - 35 U.S.C. § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 U.S.C. § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 92-97 and 101-107 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wolfrum et al.

No distinction is seen between the process disclosed by Wolfrum et al., and that recited in claims 92-97 and 101-107. Wolfrum et al. disclose a process for free radical chemical reactions with atomic hydrogen which comprises the steps of generating atomic

hydrogen at pressures between 10 mbar and 1.5 bar, and then mixing the generated atomic hydrogen with a chemical reactant which is capable of forming a free radical by reaction with atomic hydrogen. (See column 4, lines 10-23).

Claims 99-100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolfrum et al. as applied to claim 92 above, and further in view of Japanese 56-136,644.

It would be further obvious from Japanese 56-136,644 to generate the atomic hydrogen necessary for the process of Wolfrum et al. in the manner recited claims 99 and 100, since Japanese 56-136,644 teaches in the abstract that atomic hydrogen can be generated from $H_2$ by contacting the $H_2$ with a heating body to generate the atomic hydrogen, wherein the heating body is supported in the vacuum chamber and excited by an external heating power supply. It would be obvious that the atomic hydrogen necessary for the process of Wolfrum et al. could be generated by any conventional process, such as the process disclosed by Japanese 56-136,644.

Claim 98 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolfrum et al. as applied to claim 92 above, and further in view of Buxbaum.

It would be *prima facie* obvious from Buxbaum to provide the hydrogen atoms necessary for the process of Wolfrum et al. by flowing gaseous molecules containing hydrogen over hot platinum or palladium, since Buxbaum teaches at column 4, lines 40-43 that Pd and Pt are good dissociation catalysts of hydrogen gas or hydrogen rich molecules to atomic hydrogen, and it would be obvious that the atomic hydrogen necessary for the process of Wolfrum et al. could be generated by any conventional process, such as dissociation of hydrogen molecules with Pd or Pt.

Claims 52-91 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wolfrum et al.

No distinction is seen between the apparatus disclosed by Wolfrum et al., and that recited in claims 52-91. Regarding claims 56-66, recitation of the catalyst is a method limitation and accordingly is not given weight in an apparatus claim.

Claims 52-91 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 52-91 are indefinite in constituting apparatus claims which include method limitations. Limitations such as "gaseous hydrogen atoms", "gaseous catalyst" and "whereby said hydrogen atoms react with said catalyst in said vessel at a pressure less than atmospheric" are method limitations. It is with-settled that method limitations are improper in apparatus claims.

Any inquiry concerning this communication should be directed to Wayne A. Langel at telephone number (703) 308-0248.

Wayne A. Langel

WAYNE LANGEL
PRIMARY EXAMINER
GROUP 110

**Wayne A. Langel**:cb
Primary Examiner

October 20, 1998